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(71) Applicant

**Tambrands Limited**

(Incorporated in the United Kingdom)

**Dunsbury Way, Havant, Hants, PO9 5DG,  
United Kingdom**

(72) Inventors

**Pablo P. Zamora**

**Lala Akhter**

**Mario Travaglini**

(74) Agent and/or Address for Service

**Boulton Wade & Tennant**

**27 Fumival Street, London, EC4A 1PQ,  
United Kingdom**

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(56) Documents cited

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**US 4027673 A**

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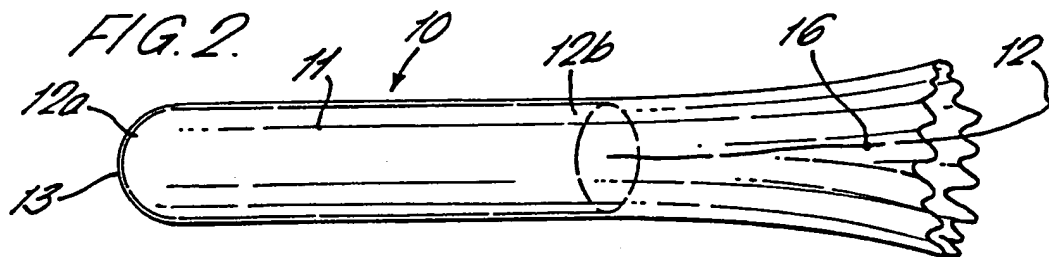
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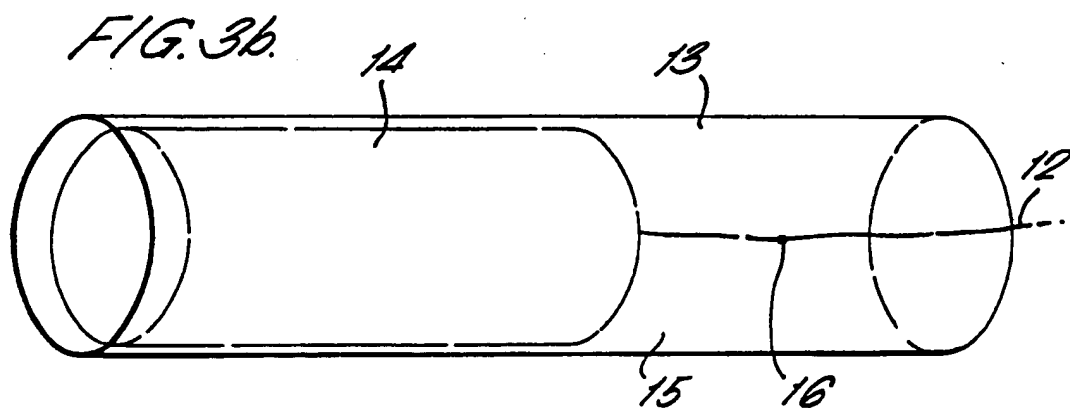
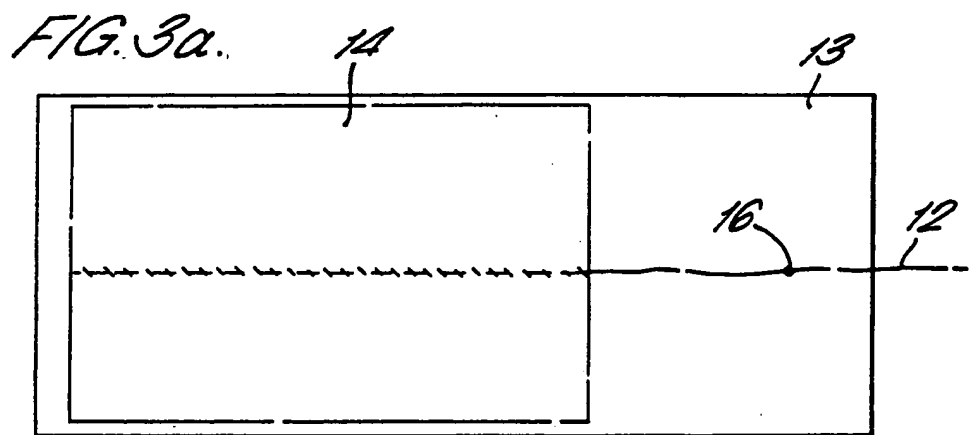
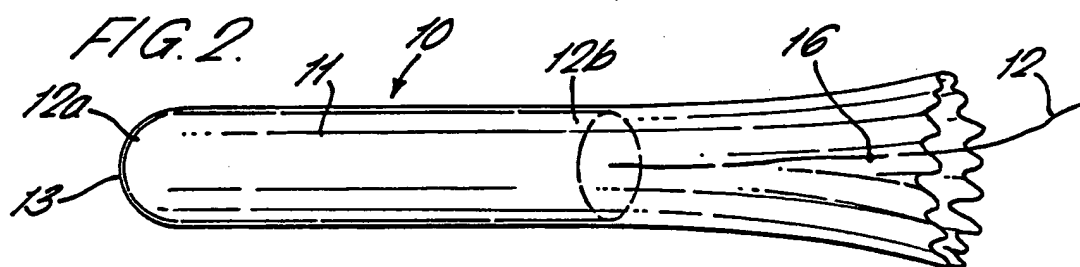
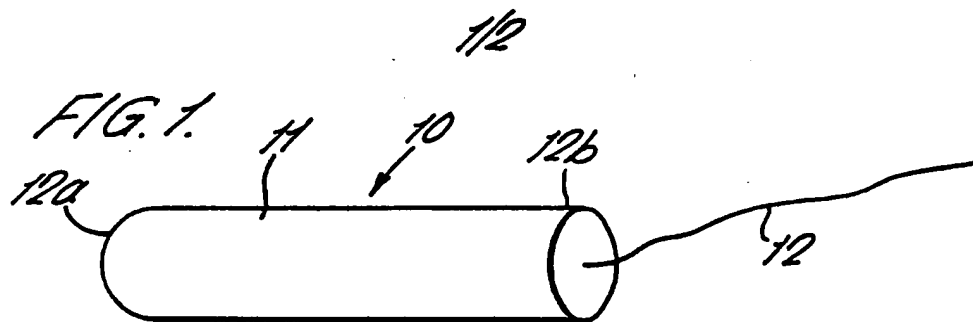
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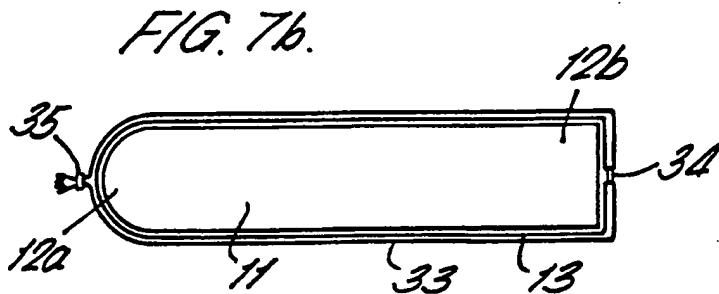
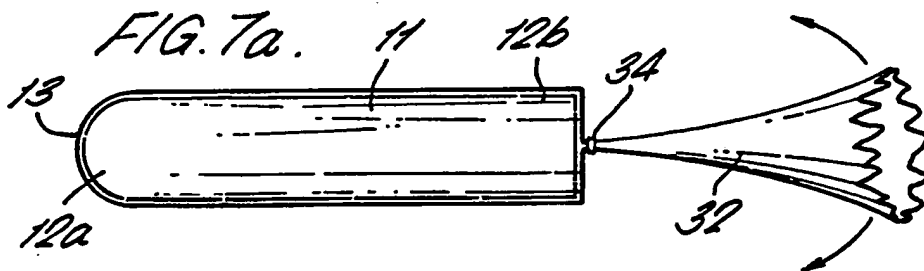
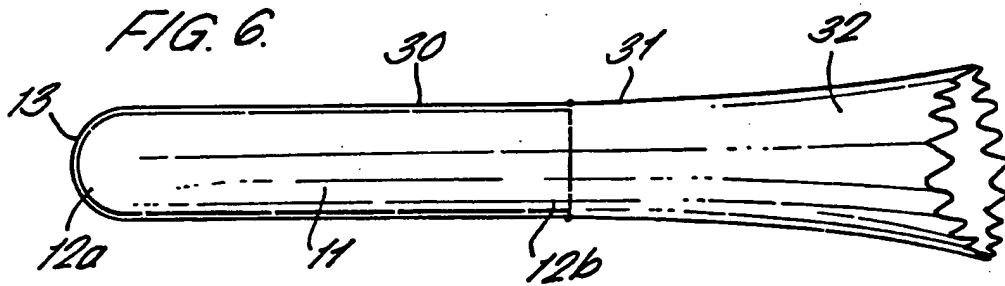
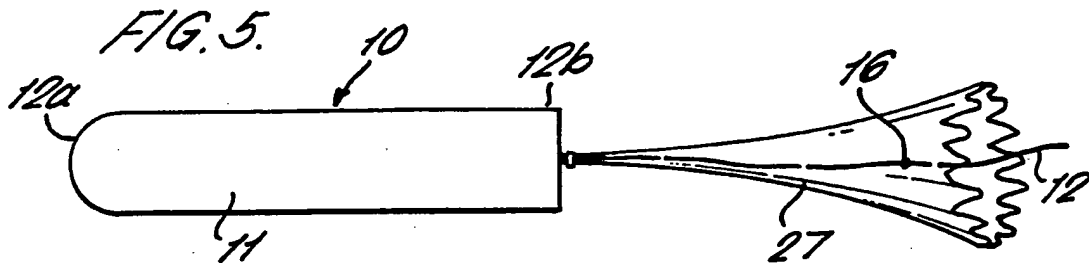
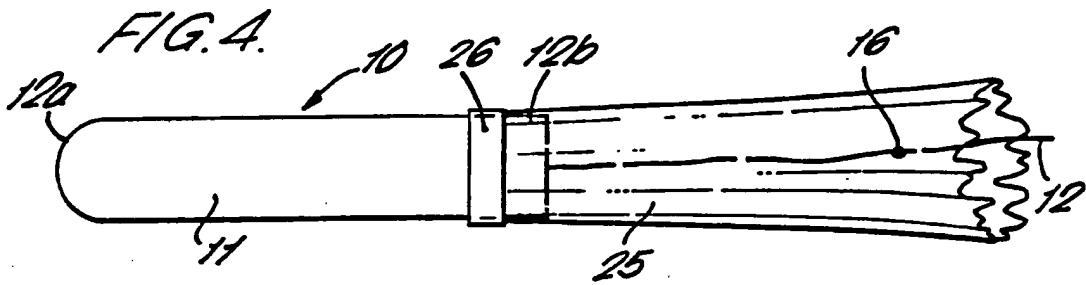
**INT CL<sup>6</sup> A61F**

(54) Improvements in digital tampons

(57) The present invention relates to a tampon comprising a body (11) of compressed absorbent material and a skirt (16) fixed to and extending from one end of the tampon to form a finger cover.







IMPROVEMENTS IN DIGITAL TAMPONS

5

The invention relates to improvements in sanitary tampons for digital insertion into the body of the user and in particular to such tampons having  
10 hygienic finger covers.

Digital tampons have been widely used for many years and their use has been limited by a number of disadvantageous features. Most importantly the delicate tissue of the vagina is at risk of damage  
15 and possible infection by non-sterile fingers and nails. This problem has been largely avoided by the use of tampon applicators which reduce this risk, but such tampons leave the user with an applicator to dispose of, which in some circumstances is not  
20 convenient.

A further disadvantage of prior art digital tampons is that the tampons themselves can chafe and abrade the vaginal tissue during insertion of the tampon. The latter disadvantage has led to the  
25 development of tampons which are overwrapped with a membrane having special characteristics, which remains in place during insertion and provides protection against abrasion by the tampon. In some of these tampons, when the wrapping comes into  
30 contact with the menstrual fluids the wrapping dissolves and disperses allowing the tampon to expand and fully utilise its absorption potential. Other wrappers have been developed which are permeable to but not soluble in menstrual fluids. However, even  
35 with these improved wrapped tampons control of the tampon during insertion is limited due to the

restrictions in handling for hygienic reasons which  
5 results in discomfort for the user.

It is therefore an object of the invention to  
provide an improved digital tampon for convenient  
hygienic insertion which eliminates the problems  
10 outlined previously.

The present invention provides a tampon  
comprising a body of compressed absorbent material  
and a skirt fixed to and extending from one end of  
the tampon to form a finger cover.

15 Preferably the tampon body is overwrapped with  
a permeable membrane which is insoluble in menstrual  
fluid.

20 In a preferred embodiment the skirt is formed  
integrally with the permeable membrane or the skirt  
may be attached to the tampon body by soluble or  
insoluble means.

25 A withdrawal cord is preferably securely  
attached to the tampon body and may also be attached  
to at least one point on a free end of the skirt.  
Alternatively the skirt may be extended to form  
withdrawal means for the tampon.

30 Preferably the length of the skirt is such that  
it can be used to cover the tampon to provide an  
outer wrapping, and the material is preferably  
impermeable to water.

35 Further features and advantages of the

invention will be apparent from the following  
5 description, by way of example of one embodiment of a  
digital tampon according to the invention, the  
description being read with reference to the  
accompanying drawings in which:

Fig. 1 is a perspective view of a prior art  
10 digital tampon;

Fig. 2 is a perspective view of a digital  
tampon according to the invention;

Fig. 3a is a side elevation of the digital  
tampon of Fig. 2 prior to the final stage of  
15 manufacture;

Fig. 3b is a perspective view of an alternative  
digital tampon prior to the final stage of  
manufacture;

Fig. 4 is a side elevation of an alternative  
20 embodiment of a digital tampon according to the  
invention.

Fig. 5 is a side elevation of another  
embodiment of a digital tampon according to the  
invention.

25 Referring first to Fig. 1, a digital tampon  
comprises a body 11, being a cylindrical wad of  
compressed absorbent material and a withdrawal cord  
12 securely fixed to the tampon body 11. The body 11  
preferably has a rounded distal end 11a, for ease of  
30 insertion, and a flattened proximal end 11b, the cord  
12 being fixed at the proximal end. This is a  
typical known tampon, although the invention applies  
to all types of digital tampons.

Fig. 2 shows a digital tampon according to the  
35 invention which has been overwrapped with a membrane  
13.



Tampon 10 is manufactured from a wad of  
5 absorbent material 14 (see Fig's. 3a or 3b) being of  
any suitable shape to which is attached by any  
suitable means such as stitching, interweaving,  
interplaiting etc. the withdrawal cord 12. The  
10 absorbent material 14 is wrapped around with membrane  
13 to form a covering, with an excess of membrane 13  
at the proximal end 11b. The absorbent material 14  
and membrane 13 are then compressed in a suitable  
manner such that they bond together to form an  
overwrapped tampon 10. As the absorbent material 14  
15 and the portion of the membrane 13 covering the wad  
14 are compressed, the remaining portion of  
the membrane 13 which extends past the proximal end  
12b of the tampon body 11 is not compressed and  
therefore forms a skirt 15 flaring from the proximal  
20 end 12b of the tampon body 11 around the withdrawal  
cord 12.

The skirt 15 forms a finger cover which allows  
the user to insert the tampon 10 without the need for  
the users fingers to contact the vagina, and allows  
25 the user to get a firmer grip on the tampon 10  
without touching the tampon body 11 to give better  
control during insertion.

The choice of material for the overwrap  
membrane 13 is extremely important and known  
30 materials which may be used include polyethylene and  
polypropylene, but the invention is by no means  
limited to these materials only. The material must  
fill a number of characteristics in that it must be  
non-soluble in menstrual fluids, otherwise the skirt  
35 15 would only be of use during insertion of tampons  
10 and not thereafter for withdrawal. The material

must not retard expansion of the absorbent fibre and  
5 must be permeable to menstrual fluids such that it  
does not restrict the absorption properties required  
of the tampon 10. Furthermore, the material must be  
such that the skirt does not act as a wick which  
would render the tampon 10 useless for its required  
10 purpose. The outer surface of the material should  
preferably be as smooth as possible for easy  
insertion into the users body and to reduce abrasion  
and chafing and it must also be tear resistant.

In an alternative embodiment of the invention  
15 as shown in Fig. 4, a skirt 25 is attached to a  
tampon body 11 after compression of the absorbent  
material 14. In this case the tampon may be  
overwrapped but this is not necessary. The skirt 25  
is attached by means of a sleeve 26 or other suitable  
20 means, which attaches it securely to the proximal end  
12b of the tampon body 11.

Where the finger cover 25 is not required for  
removal of the tampon 10, the attachment means may be  
H<sub>2</sub>O soluble, which allows for detachment of the  
25 skirt 25 when the tampon 10 is in position.

Fig. 5 shows another alternative embodiment of  
the invention, in which a skirt 27 is attached to the  
withdrawal cord 12 after the compression process of  
an overwrapped or a plain tampon 10.

30 In a preferred embodiment of the invention as  
shown in Figs. 2, 4 or 5, the withdrawal cord 12 is  
attached to the skirt 15, 25, 27 at point 16 towards  
the extremity of the skirt, by a spot-weld or other  
suitable means. Thus, when the tampon 10 is  
35 unwrapped from its packaging for use, as the  
withdrawal cord 12 is pulled out to its full length,

the finger cover 15 is conveniently extended with it.

5           In another embodiment of the invention (not shown), the withdrawal cord 12 may be omitted altogether and the finger cover 15, 25 is then used as the withdrawal means for the tampon 10. In this  
10           embodiment of the invention, the length of skirt 15, 25 is extended to the standard length of a withdrawal cord 12. The material used for the skirt 15, 25 must of course have adequate strength to act as the withdrawal means in addition to the properties listed above.

15           In another embodiment of the invention (Figs. 6 and 7), the overwrap membrane 13 comprises two sections 30, 31. A first section 30 is permeable to menstrual fluid, whilst a second section 31 is fluid  
20           repellant. The membrane 13 may either comprise a single material a portion of which has been treated to give the second set of properties or two materials grafted together. In this way the finger cover 32 can additionally be used to form the tampon secondary  
25           wrap 33. Referring first to Fig. 7a, tampon 10 in manufactured such that the tampon body is overwrapped with first section 30 and the skirt 32 is made from second section 31. The skirt 32 is twisted at the proximal end 12b of the tampon body 11 to form a seal  
30           34 and then folded back over the tampon body 11. The ends of skirt 32 are then twisted or closed by other suitable means to form seal 35 such that the non-permeable material 31 forms the secondary wrap 33.

          Obviously any suitable and convenient means of forming seals 34, 35 may be used.

35           The advantage of this embodiment of this invention is that no additional secondary wrapping is

required.

5           Although the disclosure is made with reference  
to digital tampons, the finger cover may be adapted  
for use with applicator tampons.

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CLAIMS:

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1. A tampon comprising a body of compressed absorbent material and a skirt fixed to and extending from one end of the tampon to form a finger cover.

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2. A tampon as claimed in claim 1 in which the tampon body is overwrapped with a permeable membrane which is insoluble in menstrual fluid.

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3. A tampon as claimed in claim 1 or claim 2 in which the skirt is formed integrally with the permeable membrane.

20

4. A tampon as claimed in claim 1 or claim 2 in which the skirt is attached to the tampon body.

5. A tampon as claimed in claim 4 in which the attachment means are soluble in menstrual fluid.

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6. A tampon as claimed in any one of claims 1 to 5 further comprising a withdrawal cord securely attached to the tampon body.

30

7. A tampon as claimed in claim 6 in which the cord is attached to at least one point on a free end of the skirt.

35

8. A tampon as claimed in any one of claims 1 to 4 in which the skirt is extended to provide withdrawal means for the tampon.

9. A tampon as claimed in any one of the preceding

claims in which the length of the skirt is such that  
5 it can be used to cover the tampon to provide an  
outer wrapping.

10. A tampon as claimed in claim 9 in which the  
material of the skirt is impermeable to water.

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11. A tampon substantially as hereinbefore  
described with reference to and as shown in the  
accompanying drawings.

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